CLAIMS

1. A process for hydrodesulphurising a kerosene and/or gas oil cut, comprising

- at least one first intense hydrodesulphurisation step a) in which said gas oil cut and hydrogen are passed over a catalyst disposed in a fixed bed comprising, on a mineral support, at least one metal or compound of a metal from group VIB of the periodic table in a quantity, expressed as the weight of the metal with respect to the weight of the finished catalyst, of about 0 5% to 40%, at least one non noble metal or compound of a non noble metal from group VIII of said periodic table in a quantity, expressed as the weight of the metal with respect to the weight of the finished catalyst, of about 0 1% to 30%, and
- b) at least one subsequent second step b) in which a gas fraction containing at least a portion of the hydrogen sulphide contained in the total effluent from said first step and an effluent that is depleted in hydrogen sulphide are recovered;
- c) at least one third step c) in which at least a portion of the hydrogen sulphide-depleted effluent from step b) and hydrogen are passed over a catalyst disposed in a fixed bed, identical to or different from that used in step a) comprising, on a mineral support, at least one metal or compound of a metal from group VIB of the periodic table in a quantity, expressed as the weight of the metal with respect to the weight of the finished catalyst, of about 0 5% to 40%, at least one non noble metal or compound of a non noble metal from group VIII of said periodic table, in a quantity, expressed as the weight of the metal with respect to the weight of the finished catalyst, of about 0 1% to 30%, said process being characterized in that the quantity of catalyst used in the first step is about 5% to about 50% by weight of the total quantity of catalyst used in said process.

2. A process according to claim 1, in which the quantity of catalyst used in the first step is about 10% to about 40% of the total quantity of catalyst used in said process

3. A process according to claim 1 or claim 2, in which step b) for recovering a gas fraction containing at least a portion of the hydrogen sulphide contained in the total effluent from step a) is carried out by stripping using at least one hydrogen-containing gas at a pressure substantially identical to that prevailing in the first step and at a temperature of about 100°C to about 450°C under conditions such that a gaseous

stripping effluent containing hydrogen and hydrogen sulphide is formed along with a liquid feed that is depleted in hydrogen sulphide.

4. A process according to claim 1 or claim 2, in which step b) for recovering a gas fraction containing at least a portion of the hydrogen sulphide contained in the total effluent from step a) is carried out by flashing the total effluent from step a).

5. A process according to any one of claims 1 to 4, in which the operating conditions for step a) comprise a temperature of about 240°C to about 420°C, a total pressure of abut 2 MPa to about 20 MPa and an hourly space velocity of liquid feed of about 0 1 to about 5 and that of step c) comprises a temperature of about 240°C to about 420°C, a total pressure of about 2 MPa to about 20 MPa and an hourly space velocity of liquid feed of at most equal to approximately the hourly space velocity of liquid feed in step a)

6. A process according to any one of claims 1 to 5, in which the catalyst used in step a) and that used in step c) each comprise at least one metal or compound of a metal from group VIB selected from the group formed by molybdenum and tungsten and at least one metal or a compound of a metal from group VIII selected from the group formed by nickel, cobalt and iron.

7. A process according to any one of claims 1 to 6, in which the catalyst used in step a) and that used in step c) each comprise molybdenum or a compound of molybdenum in a quantity, expressed as the weight of metal with respect to the weight of finished catalyst, of about 2% to 30%, and a metal or a compound of a metal selected from the group formed by nickel and cobalt in a quantity, expressed as the weight of metal with respect to the weight of the finished catalyst, of about 0 5% to 15%.

8. A process according to any one of claims 1 to 7, in which the catalyst used in step a) and that used in step c) each comprise nickel as the group VIII metal, and molybdenum as the group VIB metal

9. A process according to any one of claims 1 to 8, in which the catalyst used in step a) and that used in step c) each further comprise at least one element selected from the group formed by silicon, phosphorous and boron or one or more compounds of those elements

10 A process according to any one of claims 1 to 9, in which the support for the catalysts used in step a) and in step c) are selected independently from the group formed by

alumina, silica, silica-aluminas, zeolites, magnesia, titanium oxide TiO_2 and mixtures of at least two of these mineral compounds.

11 A process according to any one of claims 1 to 10, in which the catalysts used in step a) and in step c) each comprise at least one halogen.

12 A process according to any one of claims 1 to 11, in which the catalysts used in step a) and in step c) each comprise a quantity of halogen of about 0 1% to about 15% by weight with respect to the weight of the finished catalyst.

13 A process according to any one of claims 1 to 12, in which the catalysts used in step a) and in step c) each comprise at least one halogen selected from the group formed by chlorine and fluorine

14 A process according to any one of claims 1 to 13, in which the catalysts used in step a) and in step c) each comprise chlorine and fluorine.

15 A process according to any one of claims 1 to 14, in which the gas fraction recovered in step b) containing hydrogen sulphide is sent to a zone for eliminating at least a portion of the hydrogen sulphide it contains, from which purified hydrogen is recovered that is recycled to the inlet to intense hydrodesulphurisation step a).